

Abstract Submitted
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Overall static conformation of chain molecules in nanoscopic cylinders KYUSOON SHIN, School of Chemical and Biological Engineering, Seoul National University, JUIN-TAI CHEN, Department of Polymer Science and Engineering, University of Massachusetts, Amherst, PRIYANKA DOBRIYAL, Chemistry Department, University of Massachusetts, Amherst, PAPPANNAN THIYAGARAJAN, Argonne National Laboratory, THOMAS RUSSELL, Department of Polymer Science and Engineering, University of Massachusetts, Amherst — We explore the overall static conformation of chain molecules in nanopores. We used anodized aluminum oxide membrane with hexagonally packed, regular-sized nanopores with the pore diameter of 15 nm. Via strong capillary action, we have successfully filled different size polystyrene (molecular weight range 20,000 to 3,000,000) in these membranes. Polymers, whose size in the bulk is much larger than the diameter of the nanopores, should deform due to the confinement and the spatial configuration of the chain must deviate from that seen in the bulk. By examining the single chain scattering of the polymer confined within the nanopores via small angle neutron scattering, we examine whether the chain retains its random conformation or elongate along the nanopore.

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